

DEPARTMENT OF THE INTERIOR – AVIATION MANAGEMENT

AIRCRAFT RENTAL AGREEMENT PROVISIONS: SUPPLEMENT NO. 3

SPECIAL USE - LOCAL FIRE HELICOPTER REQUIREMENTS

Definitions

Interagency Fire Suppression requires aircraft to meet the standards agreed upon between the USDA and DOI. Aircraft equipped and approved for Interagency Fire Suppression may also be used for Local Fire Suppression. (See Supplement No. 2 Interagency Fire Suppression.)

Local Fire Suppression requires aircraft to meet the standards for DOI.

B8.3.1 CERTIFICATION

B8.3.1.1 The Vendor shall be certificated under 14 CFR Part 133, Rotorcraft External Load Operations. This certificate shall include Class A, B, or C as appropriate.

B8.3.1.2 The Vendor shall be certificated under 14 CFR Part 137, Agricultural Aircraft Operations, when dispensing fire suppressant chemicals.

B8.3.2 FLIGHT OPERATIONS

B8.3.2.1 **Water Bucket Use.** The following procedure shall be used for all bucket operations:

B8.3.2.1.1 Determine allowable payload using the Interagency Load Calculation method, appropriate HOGE helicopter performance charts and current local temperature and pressure altitude (no partial dips for performance planning purposes shall be authorized).

B8.3.2.1.2 At the beginning of the fuel cycle, adjust the bucket capacity so that the actual payload, when the bucket is filled to the maximum adjusted capacity, does not exceed the allowable payload.

B8.3.2.1.3 Use 8.3 pounds per gallon of water. If mixed fire retardant is being delivered by bucket, use the appropriate weight per gallon for that mixture. The weight of the empty bucket and any associated suspension hardware (lines, cables, connectors, etc.) must also be included in calculating the actual payload. The calculation of the actual bucket payload must be documented on the load calculation form or separate load manifest.

B8.3.2.1.4 Helicopters equipped with electronic helicopter hook load measuring system that provides cockpit readout of the actual external load and a bucket equipped with a gating system that allows part of the load to be released while retaining the remainder of the load may be exempt from B8.3.2.1.2.

CAUTION: There are many different manufacturers and designs of helicopter buckets. Capacity adjustments are made in various ways: Removing plugs, opening zippers or cinching collapsible/foldable buckets. Capacity at each position or adjustment level should be marked on the bucket. Collapsible buckets with cinch straps should only be adjusted to the marked graduations (as an example, 90%, 80%, 70%, 60%). Attempts to establish intermediate graduations or capacities below the manufacturer's minimum graduation (by tying knots, etc.) is prohibited as this results in estimated capacities and may interfere with the release mechanism.

B8.3.3 PERSONNEL REQUIREMENTS

B8.3.3.1 200 hours PIC in category over typical terrain, involving flights of low-level (below 500 feet above the surface) and over mountains when applicable.

B8.3.3.1.1 Pilots shall show evidence of experience in low-level operations and be knowledgeable of all specialized mission requirements. This may include low level operations, special flight techniques, terrain considerations, use of specialized navigation equipment, or operation of other equipment as appropriate for the specific mission. Pilots may be required to demonstrate their ability during an agency evaluation flight.

B8.3.3.2 The precision placement of externally carried cargo is an operational requirement of this supplement.

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Pilots shall be required to place external cargo precisely where requested regardless of the cable length while operating within the helicopter's capability. Pilots shall provide written evidence of qualification to transport Class A, B, or C external loads as appropriate. Pilots may be required to demonstrate their ability during an agency evaluation flight.

B8.3.3.2.1 Pilot endorsements for long line and water/retardant application shall require an agency flight evaluation.

NOTE: Longline is defined as any combination of load and line, attached to the cargo hook of the aircraft for the purpose of carrying an external load, greater than 50 feet in length.

B8.3.3.3 Pilots shall have recorded minimum flying time as pilot-in-command as follows:

B8.3.3.3.1 200 hours experience operating helicopters in mountainous terrain as identified in 14 CFR 95 Subpart B – Designated Mountainous Area. Operating includes, maneuvering and numerous takeoffs and landings to ridgelines, pinnacles and confined areas.

B8.3.3.3.2 10 hours Mountainous Terrain in Make and Model

B8.3.3.4 Personal Protective Equipment (PPE). The following items shall be worn by vendor personnel, be operable, and maintained in good repair:

B8.3.3.4.1 An aviator's flight helmet, consisting of a one-piece hard shell made of polycarbonate, Kevlar, carbon fiber, or fiberglass, must cover the top, sides (including the temple area and to below the ears), and the rear of the head. The helmet shall be equipped with a chinstrap and appropriately adjusted for proper fit. Flight helmets for helicopter usage must conform to a national certifying agency standard, such as DOT, Snell-95, SFI, or an appropriate military standard, and be compatible with required avionics (see section B8.3.5.4.3). "Shorty" (David Clark style) helmets are not approved. Flight helmets currently meeting this requirement are the SPH-3, SPH-4, SPH-5, SPH-4B, SPH-8, HGU-56 and HGU-84. Helmets designed for use in fixed wing aircraft do not provide adequate protection for helicopter occupants and are not approved for helicopter use.

B8.3.3.4.2 Vendor personnel, while flying, shall wear a long-sleeved shirt and trousers (or long-sleeved flight suit) made of fire-resistant polyamide or aramid material, leather boots and leather, polyamide, or aramid gloves. The long-sleeved shirt shall overlap the gloves, and the pants shall overlap the boots by at least 2 inches. Personnel shall not wear clothing made of non fire-resistant synthetic material under the fire-resistant clothing described above.

B8.3.3.4.3 Pilots shall wear a personal flotation device (PFD) when conducting hovering flight operations (water bucket dipping, snorkeling) over water sources such as ponds, streams, lakes, rivers, and coastal waters. This equipment shall be maintained in serviceable condition in accordance with the manufacturer's instructions. This equipment may, but is not required to, meet the standards of 14 CFR Part 135.167(a)(1). Automatic inflation (water activated) PFD's are not authorized.

B8.3.3.5 Personal Protective Equipment For Ground Operations

B8.3.3.5.1 While within the safety circle of an operating helicopter, all personnel shall wear the following PPE:

B8.3.3.5.2 Shirt with sleeves overlapping gloves and pants with legs overlapping boots, hard hat or flight helmet with chin strap fastened, hearing protection, and eye protection .

Note: Maintenance personnel working on a running aircraft are exempt from glove and hardhat requirements.

B8.3.3.5.3 In addition, fuel service vehicle operators shall wear non-static (example: cotton/natural fiber) clothing and gloves.

B8.3.4 EQUIPMENT REQUIREMENTS

B8.3.4.1 One digital hour meter shall be installed. The meter shall be wired in series with a switch on the collective control, and a switch activated by engine or transmission oil pressure to record flight time only.

B8.3.4.2 A first aid kit containing items specified in Exhibit 4 shall be furnished by the Vendor and carried aboard the aircraft on all flights.

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B8.3.4.3 A survival kit containing items specified in Exhibit 4 shall be furnished by the Vendor and carried aboard the aircraft on all flights.

B8.3.4.4 High skid-type landing gear, if available for make and model.

B8.3.4.5 Helicopters with a floor height greater than 18 inches shall have personnel access steps to assure safe entrance and exit from each door.

B8.3.4.6 (Alaska only) Tundra Boards or Snow Pads. Mandatory when the helicopter is not equipped with standard or emergency flotation gear as noted in the aircraft order.

B8.3.4.7 Aircraft lighting for night operation in accordance with 14 CFR 91.205(c), including instrument lights.

B8.3.4.8 A strobe light, with either a white, or ½ white and ½ red lens, mounted on top of the aircraft, or otherwise visible from above. If the aircraft certification requires the anticollision light to be aviation red, then a white strobe light with an independent activating switch shall be provided in addition to the red strobe.

B8.3.4.9 High visibility markings on main rotor blades as specified in Exhibit 7.

B8.3.4.10 One cargo hook that may be loaded and locked in a single motion with one hand, and is rated at the maximum lifting capacity of the aircraft.

B8.3.4.10.1 Helicopters for which an automatic locking cargo hook is not available are exempt from this requirement provided the cargo hook which is provided complies with the FAR applicable to the model aircraft.

B8.3.4.10.2 The inspection and maintenance of the cargo hook shall be accomplished in accordance with the manufacturers operating and maintenance instructions. If manufacturers' operating and maintenance instructions are not published, the cargo hook and associated systems shall be completely disassembled, inspected, lubricated if required, and subjected to an operations check in all operating modes within the preceding 24 months.

B8.3.4.11 The aircraft shall be equipped with a convex mirror for observation of the sling load by the pilot. For aircraft equipped and modified for vertical reference external load operation (i.e., door gauges, modified seat, alternate cargo hook release positions, bubble window, etc.) or for helicopters such as the MD Model 500 where direct vertical reference is possible the convex mirror is not required.

B8.3.4.12 **Optional Water Bucket Equipment.** One (1) collapsible, variable capacity water/retardant bucket may be furnished under this contract. The capacity shall be commensurate with the maximum lifting capability of the aircraft. The bucket to be provided must have a manufacturer's capacity adjustment commensurate with the maximum lifting capability of the offered aircraft at the environmental conditions specified in the order for services. If the water bucket shall be utilized on a longline, the bucket must be capable of being operated with all increments of the longline (i.e., 50, 100, 150 feet). See CAUTION under B8.3.2.

NOTE: When bucket is used in conjunction with a line, the minimum length shall be 50 feet and the pilot will meet the requirements of B8.3.3.2.1.

B8.3.4.13 **Optional aerial ignition equipment.** If one or both of the following electrical connectors is installed, the aircraft may be approved for aerial ignition.

B8.3.4.13.1 **Sphere dispenser:** An auxiliary power source consisting of an MS 3112E-12-3S three-pin connector, accessible to the passenger compartment. Pin B shall be airframe ground; pin A shall be +28VDC (for 28-volt aircraft); and pin C shall be +14VDC (for 14-volt aircraft). The circuit shall be protected by a 5-amp circuit breaker.

B8.3.4.13.2 **Helitorch:** An MS 3101E-24-11S, nine-pin connector shall be provided as the power source for a helitorch or remote cargo hook. Pin D shall be airframe ground. Pin E shall be switched 28VDC, protected by a 50-amp circuit breaker. The water bucket open switch shall also activate this circuit. The connector shall be mounted adjacent to the cargo hook (within 12 inches) and be supported in such a way that jettisoning the load shall not damage the connector. A lanyard shall be provided for support of the connector.

NOTE: This connector has multiple circuit capacity sufficient to provide power and control for government

furnished equipment. Wiring instructions can be found in FS/DOI AM Drawing A-16 (Exhibit 5).

B8.3.4.14 For Type III helicopters, dual controls shall be removed/deactivated after agency evaluation flights.

B8.3.5 AVIONICS REQUIREMENTS

B8.3.5.1 General:

B8.3.5.1.1 The following systems, as a minimum, shall be installed or available in addition to the basic requirements listed in the Aircraft Rental Agreement (B5). The avionics systems shall be maintained by the Vendor in accordance with the provisions of the Aircraft Rental Agreement and the installation and maintenance standards of Section B8.3.5.6 of this Supplement.

B8.3.5.2 Communications Systems

B8.3.5.2.1 One automatic-portable/automatic-fixed or automatic-fixed ELT, **meeting either TSO-C91a or TSO-C126**, utilizing an external antenna and meeting the same requirements as those detailed for airplanes in 14 CFR Part 91.207 (excluding section e and f), shall be installed per the manufacturer's installation manual, in a conspicuous or marked location.

B8.3.5.2.2 One panel-mounted VHF-AM aeronautical transceiver (VHF-1), operating in the frequency band of 118.000 to 136.975 MHz, with a minimum of 760 channels, and a minimum of 5 watts carrier output power.

B8.3.5.2.3 Provisions for auxiliary VHF-FM (AUX-FM) portable radio:

B8.3.5.2.3.1 The Vendor shall furnish the necessary provisions for installing and properly operating an auxiliary VHF-FM portable radio through the aircraft's audio control system(s). Provision shall consist of the appropriate wiring from the audio control system, terminated in an ITT/Cannon type MS3112E12-10S 10-pin connector conveniently located for use by the observer/copilot, and utilizing the contact assignments as specified by drawing FS/OAS A-17 in Exhibit 6.

B8.3.5.2.3.2 One weatherproof, external, broadband antenna covering the 150-174 MHz band, with associated RG-58A/U (or equivalent) coaxial cable and connector, terminated in a bulkhead-mounted, female BNC connector (type UG-290A), conveniently located for use by the observer/copilot adjacent to the above 10-pin connector (Comant model C-177 or equal).

B8.3.5.2.3.3 Mounting facilities, in accordance with the specifications of FAA AC 43.13-2A, for secure installation of the auxiliary VHF-FM portable radio in the cockpit shall be provided. The location of the mounting facilities shall be such that, when connected with an 18-inch adapter cable, the radio's controls shall be located and arranged so that the observer/copilot, when seated, has full and unrestricted movement of the radio's controls, without interference from clothing, the cockpit structure, or the flight controls.

B8.3.5.2.3.4 Positive-polarity microphone excitation voltage shall be provided to the AUX-FM system from the aircraft DC power system through a suitable resistor network. A blocking capacitor shall be provided to prevent the portable radio microphone excitation voltage from entering the system. Sidetone for the AUX-FM shall also be provided (NAT model AA34-300, Premier model PA-34, or equivalent).

B8.3.5.2.3.5 In lieu of the above AUX-FM requirements, the Vendor may substitute one VHF-FM aeronautical transceiver (FM-1) which meets the requirements (less guard) for a VHF-FM aeronautical transceiver, as detailed below.

B8.3.5.2.3.5.1 One VHF-FM multi-mode aeronautical transceiver (FM-1), which provides selection of both narrowband (12.5 kHz) and wideband (25.0 kHz) bandwidth operation on each channel. Operation shall remain in the narrowband mode unless otherwise directed by the Government manager.

B8.3.5.2.3.5.2 The transceiver's operational frequency range shall include the band of 150 to 174 MHz. The operator shall be able to program any usable channels within that band while in flight.

B8.3.5.2.3.5.3 Carrier output power shall be 10 watts nominal value (original design specification). The transceiver shall be capable of displaying receiver and transmitter operating frequency, and shall provide both receiver and

transmitter activation indicators for main and guard. Simultaneous monitoring of both main (150-174 MHz) and guard (168.625 MHz) receivers is required. Single bandwidth guard receivers which operate in the wideband (25.0 kHz) mode are acceptable. Scanning of the guard frequency is not acceptable. The transceiver's/encoder's operational controls must be located and arranged so that both the pilot and observer/copilot, when seated, have full and unrestricted movement of each control without interference from their clothing, the cockpit structure, or the flight controls.

B8.3.5.2.3.5.4 One CTCSS sub-audible tone encoder (which may be an integral part of the transceiver), with the lowest 32 TIA/EIA-603 standard tone frequencies (from 67.0 to 203.5 Hz, less 69.3 Hz) being selectable, shall be interfaced to the above transceiver. It is desired that the encoder provide a display of the selected tone or tone frequency.

B8.3.5.2.3.5.5 Any digital aeronautical, mobile, or portable VHF-FM radios furnished to meet the requirements of this document shall also be APCO Project 25 (EIA/TIA-102) compliant.

NOTE: All future aviation contracts solicited by DOI (which are required to be VHF-FM radio equipped) shall be furnished with at least one P25, Phase-I (digital-capable) aviation radio by January 1, 2010. In aircraft required to be furnished with more than one VHF-FM radio, all such radios must be P25, Phase-I compliant by the January 1, 2010 date.

B8.3.5.3 Navigational Systems: no requirements.

B8.3.5.4 Audio Systems:

B8.3.5.4.1 One audio control system shall be provided for the pilot and observer/co-pilot. The system shall provide pilot and observer/copilot with controls for selection of receiver audio outputs and transmitter microphone/PTT audio inputs for all installed radios. The system shall also provide pilot and observer/copilot with controls for adjustment of both ICS and receiver audio output levels.

B8.3.5.4.1.1 Transmitter selection and operation. A transmitter selection control shall be provided for the microphone/PTT inputs of pilot and observer/copilot. Whenever a transmitter is selected, the companion receiver audio shall automatically be selected for the corresponding earphone. Transmitter sidetone audio shall be provided for the user.

B8.3.5.4.1.2 Receiver selection and operation. Controls shall be provided for selection of audio from one or any combination of available receivers. Any ICS-equipped aft passenger positions shall monitor the receiver(s) as selected. The receiver audio output shall be free of excessive distortion, hum, noise, and crosstalk, and shall be amplified sufficiently to facilitate ease of use in a noisy cockpit/cabin environment.

B8.3.5.4.1.3 The controls of the audio system must be located and arranged so that both the pilot and observer/copilot, when seated, have full and unrestricted movement of their respective controls without interference from their clothing, the cockpit structure, or the flight controls. Labeling and marking of controls shall be clear, understandable, legible, and permanent. Electronic label maker marking is acceptable.

B8.3.5.4.2 An intercommunications system (ICS) shall be provided for the pilot, observer/copilot, and (if required) one passenger position. ICS audio shall mix with, but not mute, selected receiver audio. An ICS audio level control shall be provided. ICS sidetone audio shall be provided for the earphone corresponding with the microphone in use. The ICS audio output shall be free of excessive distortion, hum, noise, and crosstalk; and shall be amplified sufficiently to facilitate ease of use in a noisy cockpit/cabin environment.

B8.3.5.4.3 Earphones, microphones, PTTs, and jacks:

B8.3.5.4.3.1 The system shall be designed for operation with 600-ohm earphones and carbon-equivalent, noise-canceling boom type microphones (Gentex electret type model 5060-2, military dynamic type M-87/AIC with type CE-100 TR preamplifier (or equivalent), with U-174/U (single/male) type connector plug. The pilot position only may be configured for low impedance (dynamic) operation.

B8.3.5.4.3.2 All earphone/microphone jacks in the aircraft (except the pilot's) shall be U-92A/U (single/female) type, which shall accept U-174/U type plugs.

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B8.3.5.4.3.3 Separate PTT switches shall be provided for radio transmitter and ICS microphone operation at the pilot and observer/copilot positions. The pilot's PTT switches shall be mounted on the cyclic control. The observer/copilot's PTT switches shall be mounted on the cord to the earphone/microphone connector. In lieu of the observer/copilot's cord-mounted PTT switches, a footswitch-operated ICS/radio transmit PTT system may be utilized. ICS PTT switches for any other ICS-equipped positions shall be mounted on the cord to the earphone/microphone connector.

B8.3.5.5 Other Avionics: no requirements.

B8.3.5.6 Avionics Installation and Maintenance Standards (in addition to those of the basic Aircraft Rental Agreement):
No additional requirements.

B8.3.5.7 Drawings: FS/OAS A-17: wiring diagram for AUX-FM connector in Exhibit 6.

B8.3.6 MAINTENANCE REQUIREMENTS

B8.3.6.1 **Weight & Balance.** The aircraft's required weight and balance data shall be determined by actual weighing of the aircraft within 72 calendar months preceding the starting date of the agreement, or renewal date, and following any major repair or major alteration or change to the equipment list which significantly affects the center of gravity of the aircraft.

B8.3.6.1.1 All weighing of aircraft shall be performed on scales that have been certified as accurate within preceding 24 calendar months. The certifying agency may be any accredited weights and measures laboratory.

B8.3.6.1.2 A list of equipment installed in the aircraft at the time of weighing must be compiled. The equipment list shall include the name of each item installed. Items which may be easily removed or installed for aircraft configuration changes (seats, doors, radios, cargo hook, baskets, special mission equipment, survival kit, etc.) shall also be listed including the name, the weight and arm of each item. Each page of the equipment list must identify the specific aircraft by at least serial number or registration number of the aircraft. Each page of the equipment list shall be dated indicating the last date of weighing or computation. The weight and balance must be revised each time new equipment is installed or old equipment is removed. Weight and balance procedures under 14 CFR 135.23(b) and 135.185 are acceptable.

B8.3.6.2 **Time Between Overhaul and Life Limited Parts.**

B8.3.6.2.1 All components, including engines, shall be replaced upon reaching the factory-recommended TBO or FAA-approved extension. Life limited parts shall be replaced at the specified time in service hours or cycles.

B8.3.6.2.2 Aircraft operated with components or accessories on approved TBO extension programs are acceptable provided: (1) the Vendor is the holder of the approved extension authorization (not the owner if the aircraft is leased), and (2) the Vendor operates in accordance with the extension authorization.

B8.3.6.2.3 The Vendor shall supply, at the time of the initial agency inspection, a list of all items installed on the aircraft that are required to be overhauled or replaced on a specified time basis. This list shall include the components name, part number, serial number, total time, service life (or inspection/overhaul time interval), and time and date when component was overhauled, replaced, or inspected.

B8.3.6.3 **Turbine Engine Power Assurance Check.** The first day of operation and no more than each ten hours of operation thereafter, a power assurance check shall be performed. The power assurance check shall be accomplished in accordance with the helicopter flight manual (pilots operating handbook) or approved company performance monitoring program. The results shall be recorded and kept in the helicopter or at the designated base. Engines with power output below minimum approved limits shall be removed from use until the cause of the low power condition is corrected.

FIRST AID & SURVIVAL KITS

**These are minimum required items for Special Use Activities in the United States and U.S. Possessions.
Additional survival kit items are required for flight activities conducted in Canada and Alaska.**

| Minimum First Aid Kit Items | | |
|---|--------------------------------|----------------------------------|
| Each kit must be in a dust-proof and moisture-proof container. The kit must be readily accessible to the pilot and passengers. | | |
| Item | Passenger Seats 0-9 | Passenger Seats 10-50 |
| Adhesive bandage strips, (3"long) | 8 | 16 |
| Antiseptic or alcohol wipes (pkts) | 10 | 20 |
| Bandage compresses, 4" | 2 | 4 |
| Triangular bandage, 40" (sling) | 2 | 4 |
| Roller bandage, 4"x 5 yds (gauze) | 2 | 4 |
| Adhesive tape, 1"x 5 yds (std roll) | 1 | 2 |
| Bandage scissors | 1 | 1 |
| Body Fluids Barrier kit: | 1 | 1 |
| 2 - pair latex gloves | | |
| 1 - face shield | | |
| 1 - mouth-to-mouth barrier | | |
| 1 - protective gown | | |
| 2 - antiseptic towelettes | | |
| 1 - biohazard disposable bag | | |
| NOTE: Splints are recommended if space permits. | | |

MINIMUM AIRCRAFT SURVIVAL KIT ITEMS

These are minimum required items for special use activities in the conterminous United States (including Alaska) and U.S. possessions.

| | |
|--|--|
| Fire Starter (can be two boxes of matches in a waterproof container) | Magnesium fire starter |
| One knife | Signal Mirror |
| Signal Flares (six each) or One 72-Hour Laser Type Flare occupant) | Food (two days emergency rations per |
| Candles | Water purification tablets |
| Collapsible water bag | Whistle |
| Space Blanket (one per occupant) | Nylon rope or parachute cord (50 feet) |

These are additional items for the contiguous U.S. and U.S. Possessions:

Water (one quart per occupant required when operating over areas without adequate drinking water)

These are additional items for Alaska only:

Rations for each occupant sufficient to sustain life for one week
 One axe or hatchet
 One first aid kit
 One mosquito headnet for each occupant
 Insect repellent
 An assortment of tackle such as hooks, flies, lines, sinkers, etc.
OCTOBER 15 TO APRIL 1
 One pair of snowshoes
 One sleeping bag
 One wool blanket or equivalent for each occupant over four years of age

Note: Operators of multiengine aircraft licensed to carry more than 15 passengers need carry only the food, mosquito nets, and signaling equipment at all times other than the period from October 15 to April 1 of each year, when two sleeping bags and one blanket for every two passengers shall also be carried. All of the above emergency rations and equipment requirements are the minimum requirements under current law.

FS/OAS A-16: ACCESSORY CONNECTOR PIN ASSIGNMENTS**Griffith Bucket (7 wire)**

| Pin | MS 3101E-24-11S (Helicopter) | MS 3107B-24-11P (Bucket) |
|-----|------------------------------|---------------------------------|
| | Function | Function |
| A | Up limit relay coil | Up limit switch (Green) |
| B | Up switch | Up limit switch (White #16) |
| F | 28VDC/Ground (up) | 28VDC/Ground (up) (White #12) |
| G | Down limit relay coil | Down limit switch (Red #16) |
| H | Ground/28VDC (down) | Ground/28VDC (Down) (Black #12) |
| I | Down switch | Down limit switch (Black #16) |

Sims Bucket (3 wire)

| Pin | MS 3101E-24-11S (Helicopter) | MS 3107B-24-11P (Bucket) |
|-----|------------------------------|--------------------------|
| | Function | Function |
| B | 28VDC/Ground | 28VDC/Ground (Green) |
| G | Ground (close) | Ground (close) (White) |
| I | 28VDC (open) | 28VDC (open) (Black) |

Sims Bucket (8 wire)

| Pin | MS 3101E-24-11S (Helicopter) | MS 3107B-24-11P (Bucket) |
|-----|------------------------------|------------------------------------|
| | Function | Function |
| A | 28VDC (Open) | 28VDC (Open) (White/Black) |
| D | Ground | System Ground (Blue/Green) |
| F | 28VDC | System Power (White, Red, Black) |
| H | Indicator light | Indicator light return (Red/Black) |
| I | 28VDC (Close) | 28VDC (Close) (Orange) |

Chadwick Bucket (2 wire)

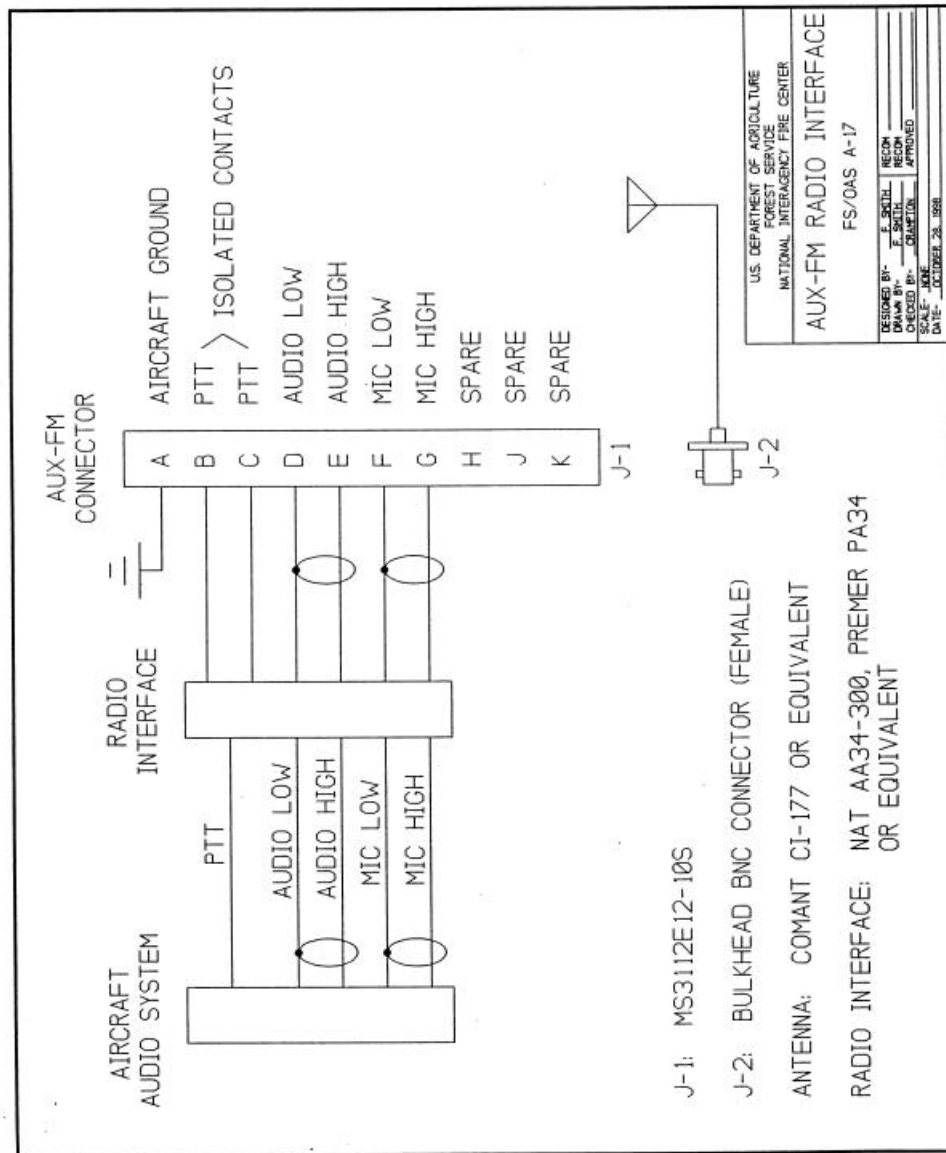
| Pin | MS 3101E-24-11S (Helicopter) | MS 3107B-24-11P (Bucket) |
|-----|------------------------------|--------------------------|
| | Function | Function |
| B | 28VDC/Ground (Open) | 28VDC/Ground (Open) |
| H | Ground/28VDC (Close) | Ground/28VDC (Close) |

Brackett Carousel/Chadwick Bucket (3 wire)

| Pin | MS 3101E-24-11S (Helicopter) | MS 3107B-24-11P (Bucket) |
|-----|------------------------------|----------------------------|
| | Function | Function |
| C | 28VDC Reset/bucket (close) | 28VDC Reset/bucket (close) |
| D | Airframe Ground | System Ground |
| E | 28VDC Hook/bucket (open) | 28VDC Hook/bucket (open) |

Simplex Helitorch, Bambi Bucket, Remote Hook, And Seeders (2 wire)

| Pin | MS 3101E-24-11S (Helicopter) | MS 3107B-24-11P (Bucket) |
|--------------|------------------------------|--------------------------|
| | Function | Function |
| D | Airframe Ground | System Ground |
| E | 28VDC (bucket open) | 28VDC Bucket/Hook Open- |
| Torch/Seeder | | |



ACCEPTABLE PAINT SCHEMES

1. Starting at the blade tip, paint the first 1/6 of the blade length with gloss white. Paint the second 1/6 of the blade length with yellow or orange. Paint the third 1/6 of the blade length with gloss white. Paint the next 1/3 of the blade length with yellow or orange. Paint the remaining 1/6 of the blade length with gloss white.

| | | | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| W | Y | W | Y | W | HUB | W | Y | W | Y | W |
| 1/6 | 1/6 | 1/6 | 1/3 | 1/6 | | 1/6 | 1/3 | 1/6 | 1/6 | 1/6 |

2. One black and one white blade (two-bladed rotor systems).
3. Paint schemes previously approved under a U.S. Forest Service or Office of Aircraft Services contract.
4. High visibility paint schemes and color variations specified by manufacturer in a service bulletin, instruction, or other manufacturer-published document or text.